

Stroke Brief

What is a Stroke?

Stroke is a type of cardiovascular disease that occurs when blood and oxygen are unable to reach the brain due to blockage or rupturing of a blood vessel. Without proper nutrients and oxygen, the deprived part of the brain begins to die. Stroke is the third leading cause of death in the United States.¹

There are several types of stroke²:

- *Ischemic stroke* accounts for 83% of all strokes. It occurs when a clot is formed in a blood vessel that supplies blood to the brain as a result of atherosclerosis. This can cause either a cerebral thrombosis or embolism.
- *Hemorrhagic stroke* accounts for 17% of all strokes. It occurs when a blood vessel that supplies blood to the brain ruptures and bleeds into the brain, compressing the tissue. Hemorrhages can be either intracerebral or subarachnoid.
- *Transient ischemic attack* is a short-term obstruction of a blood vessel that supplies blood to the brain, producing a “warning stroke.”

Some of the physical effects of stroke include:

- Death
- Paralysis
- Vision problems
- Memory loss
- Spasticity (involuntary movement of muscles)
- Imbalance
- Pain

Risk Factors for Stroke

Demographic Risk Factors

- *Age*
 - About three-fourths of stroke deaths occur in people aged 65 years and older.³
 - After the age of 55, the risk of stroke more than doubles every ten years.³
- *Genetics/Heredity*
 - Stroke can run in families.²
 - Sickle cell anemia, a genetic blood disorder of red blood cells, increases the risk for stroke.⁴
- *Gender*
 - The incidence of stroke is higher among males than females at younger, but not at older ages.⁵
 - Pregnant women have a higher risk for stroke than women who are not pregnant.⁴

- Women who smoke or who are on birth control pills, and who have other risk factors, also have a higher stroke risk.⁴
- *Race/Ethnicity*
 - By proportion, more African Americans die from strokes than whites, even at younger ages.³

Social and Behavioral Risk Factors

- *High Blood Pressure*
 - Hypertension is the most important risk factor for stroke.⁵
 - Individuals with blood pressure below 120/80 mm Hg are about half as likely to have a stroke within the course of their lifetime as those with high blood pressure.**Error! Bookmark not defined.**
- *Heart Disease*
 - Individuals with heart disease have twice the risk of stroke that those without heart disease.¹
- *Atrial Fibrillation*
 - Atrial fibrillation (irregular beating of the upper chambers of the heart) increases the risk of stroke approximate five-fold.**Error! Bookmark not defined.**
- *Transient Ischemic Attacks (TIAs)*
 - Often called mini-strokes, these produce stroke-like symptoms, but with no lasting damage. Treatment, such as the use of blood thinners, to prevent clots from forming lessens the risk a person will suffer a major stroke.⁴
- *Diabetes*
 - Diabetics have two to four times the risk of stroke than non-diabetics.⁶
- *High Blood Cholesterol Levels*
 - Atherosclerosis can lead to ischemic stroke.⁶
 - High cholesterol levels can lead to fat deposits in the arteries.⁶
- *Tobacco Use*
 - The risk of ischemic stroke in smokers is about double that of nonsmokers.⁶
- *Heavy Alcohol Consumption*
 - Excessive alcohol consumption can lead to an increase in blood pressure, which increases the risk for stroke.⁶
- *Physical Inactivity*
 - Exercise and physical activity reduce the risk for stroke and stroke death.⁵
- *Drug Abuse*
 - Intravenous drug and cocaine use have been associated with an increased risk for stroke.⁴

National Statistics and Disparities

Statistics

- Nationally, an estimated 5.8 million adults aged 20 years and older had a stroke in 2005.^{Error! Bookmark not defined.}
- As of 2005, 2.3% of Californians had been told by a doctor they had a stroke.⁷
- About 780,000 people experience a new or recurrent stroke annually, and about 77% of these are first attacks.¹
- On average, someone will have a stroke in the United States every 40 seconds.¹
- Each year more than 750,000 people have a new or a recurrent stroke.^{Error! Bookmark not defined.}
- Nationally, strokes accounted for about one of every 16 deaths in 2004; more women died than men.**Error! Bookmark not defined.**
- Nationally, someone dies from a stroke every three to four minutes.**Error! Bookmark not defined.**

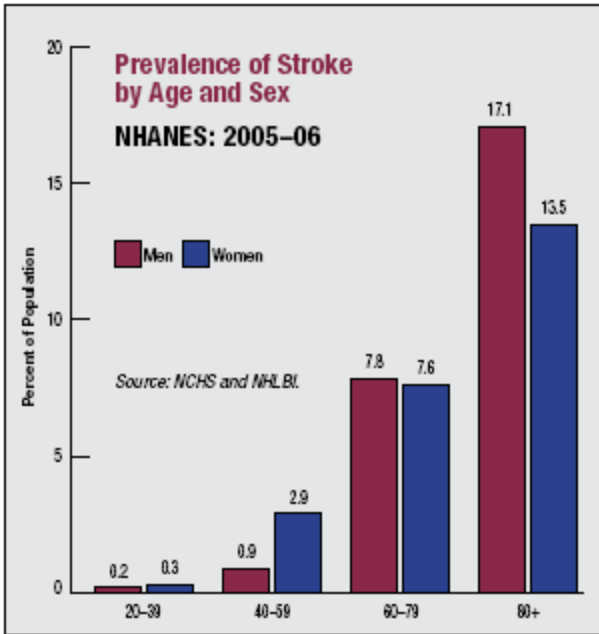
Disparities

- Stroke incidence rates are higher among men than women at younger, but not at older, ages.**Error! Bookmark not defined.**
- Each year about 60,000 more women than men have a stroke. This is because the average life expectancy for women is greater than men, and the highest rates of stroke are in the oldest age groups.³
- Blacks have almost twice the risk of first-ever stroke compared to Whites.**Error! Bookmark not defined.**

Gender Incidence Ratio of Stroke in the United States, 2008**Error! Bookmark not defined.**

Age	Male/Female
55 – 64	1.25
65 – 74	1.50
75 – 84	1.07
85+	0.76

- Stroke accounted for one of every 16 deaths in 2004 in the United States.¹
- On average, someone dies of a stroke every three to four minutes.¹
- Rate of death due to stroke in California in 2003 was 57.0 per 100,000, higher than the national average of 53.0 per 100,000 (age-adjusted rates).⁸



Source: Heart Disease and Stroke Statistics — 2009 Update, American Heart Association⁵

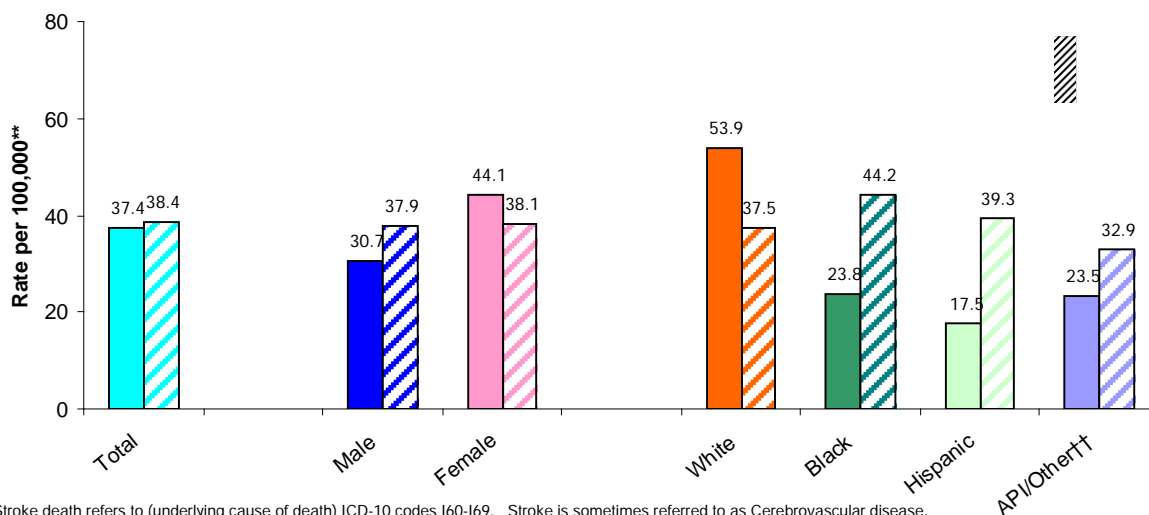
Cost

- Stroke will cost almost \$68.9 billion in both direct and indirect costs in 2009.⁵

Local Statistics and Disparities

- As of 2005, 1.9% of San Diego residents had been told by a doctor they had a stroke.⁷

Stroke Deaths*: Actual and Age-adjusted Rates
per 100,000 Residents of San Diego County, 2006**



*Stroke death refers to (underlying cause of death) ICD-10 codes I60-I69. Stroke is sometimes referred to as Cerebrovascular disease.

**County actual rates are per 100,000 individuals. County age-adjusted rates per 100,000 2000 US standard population.

§ Rates not calculated for fewer than 5 events.

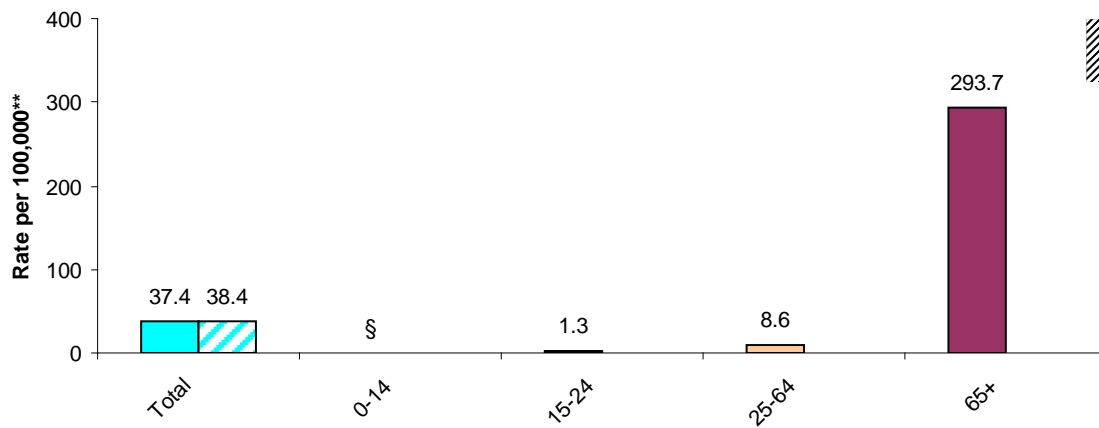
†† API/Other includes Asian, Pacific Islanders, those reporting 2 or more race/ethnicities, other, or had missing information.

Source: Death Statistical Master Files (CADPH), CoSD HHSA Community Epidemiology, 2006; SANDAG, Current Population Estimates, 9/27/2006.

Prepared by County of San Diego (CoSD), Health & Human Services Agency (HHSA), Community Health Statistics, 9/29/2008.

- In 2006, the age-adjusted death rate due to stroke was 38.4 per 100,000 among all San Diego County residents.
- The age-adjusted death rate was similar for men and women (37.9 per 100,000 versus 38.1 per 100,000, respectively).
- Black residents had the highest stroke death rate (44.2/100,000) compared to white (37.5 per 100,000), Hispanic (39.3 per 100,000) and API/Other (32.9 per 100,000).

Stroke Death* Rates by Age Group
per 100,000 Residents of San Diego County, 2006**



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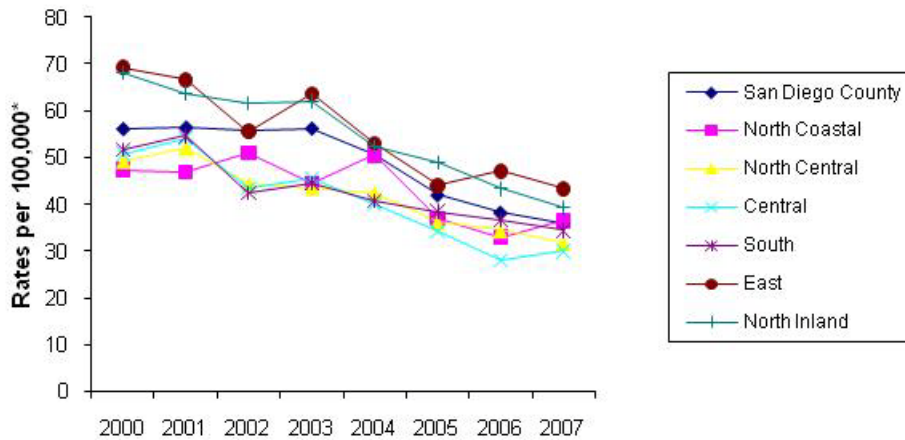
†† API/Other includes Asian, Pacific Islanders, those reporting 2 or more race/ethnicities, other, or had missing information.

Source: Death Statistical Master Files (CADPH), CoSD HHSA Community Epidemiology, 2006; SANDAG, Current Population Estimates, 9/27/2006.

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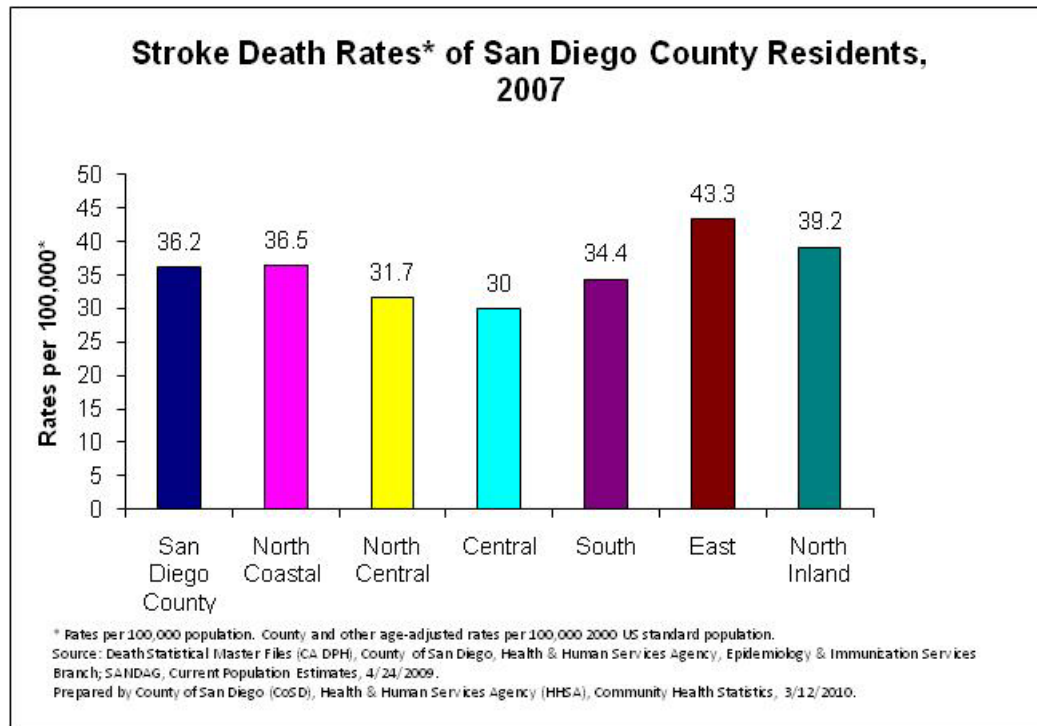
- In 2006, the actual stroke death rate was highest in San Diego County residents aged 65+ years (293.7 per 100,000).

Stroke Death Rates* of San Diego County Residents, 2000-2007



* Rates per 100,000 population. County and other age-adjusted rates per 100,000 2000 US standard population.
Source: Death Statistical Master Files (CA DPH), County of San Diego, Health & Human Services Agency, Epidemiology & Immunization Services Branch; SANDAG, Current Population Estimates, 4/24/2009.
Prepared by County of San Diego (CoSD), Health & Human Services Agency (HHS), Community Health Statistics, 3/12/2010.

- In San Diego County, the East and North Island regions had the highest rates of stroke deaths from 2000-2007.
- Overall, in every region and the County as a whole, the rates of stroke deaths decreased from 2000 to 2007.



- In 2007, the East region of San Diego County had the highest death rate due to stroke, while the Central region has the lowest.
- Overall, the actual death rate due to stroke was 36.2 per 100,000 for San Diego County in 2007.

Stroke and Its Complications: Prevention for Individuals

- *Lower Blood Pressure*
- *Eat Healthy Foods*
 - Eating five servings of fruits and vegetables each day can reduce the risk of stroke by 30%.
 - Eat high fiber, low fat foods.
- Control Blood Sugar
- *Lower Blood Cholesterol*
- *Manage Stress*
- *Moderate Alcohol Consumption*
- *Recognize the Warning Signs of Stroke:*¹
 - Sudden numbness or weakness of the face, arm, or leg,
 - Sudden confusion, trouble speaking or understanding,
 - Sudden trouble walking, dizziness or loss of balance or coordination,
 - Sudden trouble seeing in one or both eyes,
 - Sudden severe headache with no known cause,
 - Sudden chest pain,
 - If warning signs appear, call 9-1-1 immediately.
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Prevention Tools for Public Health Professionals: Stroke Critical Pathway

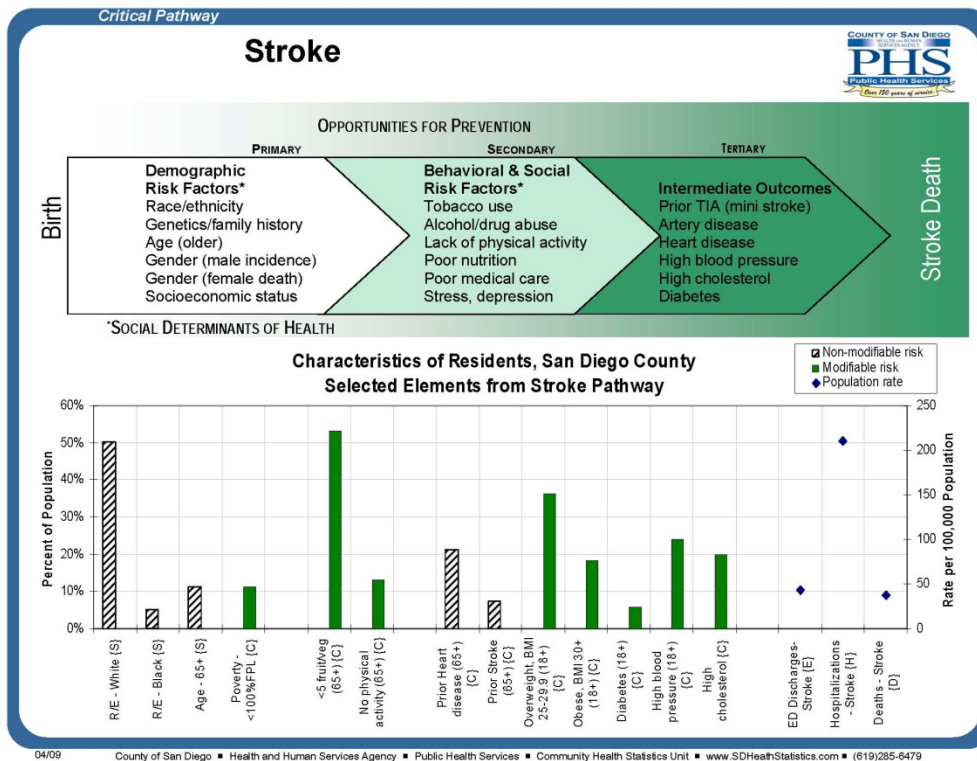
There are many opportunities for public health professionals in the community to help reduce the risk of stroke and to improve the health outcomes of individuals who already have the disease. To assist in community health efforts, a *Stroke Critical Pathway* was developed.

The *Stroke Critical Pathway* is a tool to be used in health promotion and disease prevention efforts. Its purpose is to identify populations at greater risk for stroke, and to identify prevention and early intervention opportunities. The *Stroke Critical Pathway* displays a diagram of the major risk factors and intermediate outcomes or related diseases that have an impact on, or result from, stroke. Risk factors are marked as non-modifiable (black striped bars) such as race/ethnicity or gender and modifiable (solid colored bars) such as physical activity or high blood pressure.

Beneath the risk factors diagram is a data grid describing the San Diego resident population in relation to selected elements of the pathway. The data grid is designed to assist in quick identification of opportunities for interventions that might have a high impact on a particular disease. The data represent all San Diegans, not only those with a particular disease. The left axis (bar) indicates the percent of the population with a known risk factor or intermediate outcome. The right axis (diamond) indicates the rate of a particular medical encounter within the population that is specified. The data are described fully in the complete version of the *Critical Pathways*.⁹

In addition, the Community Health Statistics Unit website (www.SDHealthStatistics.com) provides detailed demographic, health and facility data including maps of geographically formatted health data. Also available are links to other County data sources, state and national sites of interest. For further assistance with data or interpretation, please contact the Community Health Statistics Unit.

Stroke Critical Pathway to Disease.



Data Sources

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